DRAFT
Responses to Comments on the Diamond Head Phase 2 Focused RI TM

USEPA Comments

Comment 1. Page 3-7, Section 3.3.2.1, 1st paragraph: The period is missing at the end of the last sentence.

Response: Will add.

Comment 2. Page 3-7, Section 3.3.2.1: The use of NJDEP Residential Direct Contact Soil Cleanup Criteria (RDSCC) is not appropriate for this site. Also, since soil impact to groundwater is a concern, the new NJDEP regulations require site specific Impact to Groundwater Cleanup Criteria (ITGCC) be developed if a Remedial Action Workplan has not been submitted by December 2, 2008. Please refer to the impact to groundwater guidance on the following webpage http://www.state.nj.us/dep/srp/guidance/rs/ for the new methods in determining site specific numbers.

Response: We agree that the use of the NJ RDSCC is not appropriate for the site. Because the NJ RDSCC were included in the Phase 1 TM (at NJDEP's request), we also included them in this focused Phase 2 TM. The NJDEP comments on the Phase 2 TM did not indicate that the RDSCC should be removed. Please advise whether we should proceed with removing these values or whether additional input from the NJDEP is needed before addressing the comment.

On the NJ ITGCC, for several of the contaminants found in the soils during the Phase 1 RI, we compared the values which the NJDEP used in the past to site-specific values calculated based on the newly promulgated NJ Tech Requirements. Our experience with the NJDEP suggests that the NJDEP continues to use the previous values as default values if site-specific cleanup levels are not proposed for a site.

The reason that we performed the calculations only for a small number of compounds at this time - is to assess how the calculated level differed (one way or another) from the default level. We thought that this information could be used to assess path forward - specifically whether to continue using the default values or calculate site-specific values based on 2 or more parameters.

We calculated the ITGCCs using two site-specific parameters - the fraction of organic carbon and the dilution attenuation factor. While site-specific values can be estimated for other variables in the calculations, the overall process would be effort-intensive and we thought that it would be beneficial to first establish its value as it relates to the path forward and remedial strategy for the site.

The attached table compares the default and site-specific values and shows that for the compounds for which these calculations were performed, the differences between the levels were not significant. In addition, multiple contaminants are present at this site, and as described in the second path forward strategy TM, achieving individual cleanup levels will require an aggressive remedial strategy that may not be consistent with potential future uses of the site. If the overall remedial strategy is to remove the LNAPL and achieve associated reduction in contaminant levels without achieving individual contaminant cleanup levels, the usefulness of calculating site-specific ITGCC would be limited.

In summary, we recommend continuing to use (at least for now) the default ITGCC because:

1) NJDEP will likely accept the default values.
2) Differences between the two values for the contaminants considered do not appear to be significant.
3) The remedial approach for the site has still not been determined – i.e., will chemical-specific cleanup levels need to be met or whether chemical concentrations can remain above the cleanup levels.

Comment 3. Page 3-7, Section 3.3.2.1, last paragraph: Please submit electronic data according to EPA Region 2 EDD protocol. Region 2 currently uses the Equis 5.0 format. See the following website for details: http://www.epa.gov/region02/superfund/medd.htm

Response: Yes, we will submit the data.

Comment 4. Page 3-11: Please be more specific when comparing detection limits to chosen cleanup criteria. It is unclear and/or inconsistent throughout the page whether limits exceeded criteria, or were merely "high" in your estimation.

Response: We will review the text and provide proposed text changes ahead of revising the TM.

Comment 5. Page 3-12, Section 3.4.2.2, 1st bullet: Please state in greater detail what is meant by "trend" in this bullet.

Response: We propose to replace this bullet with the following:

"The concentrations measured in the samples from the landfill were not noted to increase or decrease with depth within the landfill or in any pattern along the length of the trenches. This lack of trend in concentrations changes was expected based on the heterogeneous nature of the landfill materials."

Comment 6. Page 4-6, last paragraph, Page 4-10, Additional Observations, 3rd paragraph & Page 4-1, SPLP results: Please describe in greater detail in this section how the 40% RE criteria was chosen and what specifically makes "green fingerprints" indicative of less weathered LNAPL. Was this based on product sampling of LNAPL from MW-13S, which exhibited a predominantly green fingerprint, or is this a general interpretation based on the LIF profiles?

Response:

The selection of the % RE response was based on multiple lines of evidence as identified in Table 4-5. These include the result of SPLP analysis of soil samples, the Phase 1 results for

VOCs and SVOCs in soil samples, the results of the LIF analyses, and observations of LNAPL presence in piezometers / wells in the vicinity of the sampling locations.

Specifically, the first line of evidence was the SPLP analyses of soil samples which were used to determine the leachability of the contaminants in the soil / LNAPL. Then, the LIF results corresponding to each SPLP sample location were evaluated. The evaluation consisted of comparing the LIF %RE to the SPLP result - 29% (SB-42) & 33% (SB-40) RE LIF were found to not be associated with SPLP results indicating leachability. But 46% (SB-39) RE LIF was found to be associated with an SPLP result indicating leachability. This data set was used to "bound" the leachability potential and 40% RE was selected as the cutoff %RE value indicating potential for leachability.

The basis for considering "green fingerprints" indicative of less weathered LNAPL is described below.

The color-coded LIF logs are generated from spectrometer analysis of the fluorescence light generated when the contamination is energized by the laser. The spectrometer breaks down the observed fluorescent light into 4 wavelengths (shown on the left margin of the LIF logs). A color-coded LIF log is then created based on the mixture of each wavelength that is observed in the sample – like mixing primary paint colors to get different shades of colors. Different types of NAPL products will respond with different characteristic wavelengths and therefore, different color-coded LIF logs. Similarly, the same type of product at different stages of weathering (i.e. different stages of break-down and therefore different chemical characteristics) will also respond with different characteristic wavelengths and color-coded LIF logs. Green LIF logs are created when more of the low-end wavelength spectrum is present in the sample. Based on Dakota Technology's research & CH2M HILL's experience, we've found that this low-end wavelength (i.e. green LIF log) corresponds to less weathered product.

More information about interpreting the LIF data is presented in the attached reference sheet from Dakota Technologies and can be found on the Dakota Technologies web site: http://www.dakotatechnologies.com/

Comment 7. Page 4-10, Additional Observations: The paragraph states that the difference between fingerprints at different depth intervals may be due to different product types, weathering, or mixing of product types. What was used to determine that weathering and leachability were the primary reasons for the difference as opposed to mixing or product types? See previous comment.

Response: As noted, any of these factors could be the reason for fingerprint differences. We will review the text to determine how we can more clearly state this and will provide the proposed text change ahead of revising the TM.

Comment 8. Page 4-1, SPLP results: Is "green" fingerprint characterization based on one sample?

Response: The green fingerprint was assigned by LIF (process was described in the response to comment 6) with the "green" response observed across the site. The correlation between a "green" response and leachability was based on the SPLP analysis of 4 samples. The SPLP extract of one sample contained both VOCs (benzene) and SVOCs (cresol). This sample was situated in an area of higher %RE response and was considered to indicate leachable contaminants from the soil / LNAPL sample send for laboratory analysis. The SPLP extracts of two of the remaining three samples did not contain any contaminants; the SPLP extract of the

last contained cresol. These samples were obtained from areas with lower %RE response. The results from all 4 samples together with the LIF response were used to bound the conditions that can be considered to indicate LNAPL leachability.

Comment 9. Page 4-9, Table & last paragraph: How does the software calculate soil volume?

Response: The soil volumes were "integrated" from the extent of the plume shell. Specifically, the MVS software determined the area of delineation based on interpolation and mathematical krigging of the LIF data. Once the extent (lateral and vertical) was determined, the software calculated the volume of the irregularly-shaped polygon (based on length x width x height of the 3-dimensional area of contamination).

Comment 10. Page 4-12., Additional Observations: Was the discrepancy between lab characterization of soil and field characterization of soil ever resolved?

Response: The lab observations suggest that the material may not be native soil. Lab observations are expected to be more precise because they are made in a controlled environment as opposed to more expedient field observations. The lab observations show very high saturation of the material with LNAPL, something which would not be typical of native soils. Also, when dried, the material pulverized (more like ash) while native soil would be expected to remain clumpy. The samples for laboratory analyses were collected from a layer of material characterized based on visual observations in the field as silty clay. This layer is continuous in the South/East side of site. Because of the above, the exact nature of the material could not been resolved and it cannot be stated conclusively that it is of native origin.

We propose to add the above explanation to the TM.

Comment 11. Page 5-3, Section 5.2.2: Did the LNAPL thickness measurements recorded during the recovery tests at adjacent wells show influence from the bail-down tests?

Response:
No influence of the bail down test was noted. This is consistent with the nature of the LNAPL material, which is very viscous and very difficult to recover. The recovery rate was measured to be very low and no influence in nearby wells was noted.

Comment 12. Page 5-5, Section 5.2.4: Please explain why LNAPL from PZ-10 was chosen for laboratory analysis instead of PZ-7. Based on LIF profiles, LNAPLs from the 2 wells are exhibiting different characteristics.

Response:
During the Phase 1RI, a sample of the LNAPL from MW-3 (which is adjacent to PZ-7) was collected for testing. During this focused RI, the decision was made to collect the sample from a different location to assess whether there was variability in LNAPL characteristics across the site. Based on this, the sample was collected immediately following the LNAPL recovery test at PZ-10.

Comment 13. Page 5-6, third paragraph and Figures 5-3 & 5-4: The increase in LNAPL in site wells, and the presence of LNAPL in PZ-16 could suggest mobility/leachability of the plume.

Response:
The observation of LNAPL in PZ-16 in 2008 compared to its lack at this location in 2003 may be related to the high-viscosity of the LNAPL and potentially, the long time that it needed to achieve

a steady-state (and measurable) thickness in the piezometer. During the relatively short period of the Phase 1 field activities, the high-viscosity LNAPL likely did not have sufficient time to reach the well in sufficient volume to be measured - thus suggesting at the end of the Phase 1 activities that no measurable LNAPL thickness was present at this location. In the time span between the Phase 1 and Phase 2 RIs, the viscous LNAPL material had ample time to migrate into the open void of the well. NAPL in wells is an "apparent" thickness due to the open void of the well casing resulting in artificially high thickness measurements

Comment 14. Figure 1-2:

a. Please change symbol for east and west trench samples since they are duplicates of LIF location symbols.
b. It would be more practical if % RE response ranges reflect what is being used as criteria for leachability and what is discussed in the text (<10%, 10 – 15%, 15- 40%, >40%) rather than the ranges depicted on the figure.
c. F-21 & ltr-w-4-02 are not on map.

Response: Will address all.

Comment 15. Figures 1-3, 2-3, & 2-5: Monitoring well symbol is unclear in legend.

Response: Will address.

Comment 16. Figure 2-2: Symbols for monitoring well and soil boring are not in legend even though they appear on the figure.

Response: Will address.

Comment 17. Figure 3-4: Symbol for soil boring does not appear in legend.

Response: Will address.

Comment 18. Figure 3-7: Are water table and anthropogenic fill surface inferred based on existing data in the southern portion of the cross section? Based on soil data, samples were collected below water table.

Response: The figure represents a conceptual site model of the landfill surface. It may be misleading in that it shows trench sections, while in fact the trenches run parallel to the cross section. We propose to remove the trenches and add a note to the figure and in the text stating that this is a conceptual cross section. On the figure, we will also change the solid lines to dashed lines to more clearly reflect that these lines are not a true representation.

Comment 19. Figure 4-5 & 4-6:

a. Please put vertical axis units on figures so that cross sections can be compared to LIF profiles.
b. Does the LNAPL depicted in LIF-038 in the 100%RE range in the clay have any correlation with LNAPL in the LIF-005 and PZ-7 in the same range/geologic layer?
c. LIF-74 & LIF-77 are showing what looks to be a 100% RE response on these figures, but not in the LIF profiles in Appendix 3.

Response:

a. Will address.
b. Reviewing and will provide response.
c. Figure 4-6 Section B-B', accurately depicts the LIF response measured in LIF-074 and LIF-077. The figure is based on a log scale. LIF-074 and LIF-077 have maximum of about 50-80% Re which is depicted as orange to dark orange on the log scale.

Comment 20. Figure 4-7 & 4-9: Because the %RE color coded scale is shown on these figures, it looks as if the entire area is does not fall above the 10% RE range. This is misleading and the scale should be removed from these figures.

Response: Will address.

Comment 21. Figure 5-1%: Revise 8.0 GW contour in the vicinity of PZ-19 and MW-9S.

Response: Will address.

Comment 22. Figure 5-2: Revise 11.0 GW contour so that it includes MW-14S; Revise 7.0 GW contour for MW-7S.

Response: Will address.

Comment 23. Table 3-2: Description of Feature 21 missing from table.

Response: Will address.

Comment 24. Appendix 2: Some comments are cut off in Landfill Trenching segments table.

Response: Will address.

NJDEP Comments

Comment 1. Section 1.2.3 Scope of Focused Phase 2 RI.

Response: No revisions to the TM are proposed in response to this comment. EPA notified Mr. Len Romino, Assistant Director, Remedial Response Element, Division of Remediation Management and Response that RI activities will proceed and that the extent of the disturbance to the contaminated wetland will be documented. The outline of the roadways in the contaminated wetland have been documented.

Comment 2. Figures 3-1 to 3-6 Landfill exploratory Trench Activity Quadrants.

Response: CH2M HILL can prepare call-out boxes showing cleanup level exceedances for the samples collected in the landfill. We would recommend however, that the value of completing these be discussed with the NJDEP. The exceedances noted in the landfill are random as expected based on the heterogeneous nature of the landfill materials. Therefore, adding these call-out boxes to the figures will not enhance the understanding of the landfill contamination. Please advise on desired path forward.

Comment 3. Phase 2 Groundwater Sampling Results.

Response: We propose to include Figure 4-11 from the Phase 1 TM in the Phase 2 Focused TM. This figure shows contaminant concentrations in groundwater above the peat and that no increases in contaminant concentrations are noted downgradient of the landfill.

Comment 4. Appendix 4 Water Levels and LNAPL Product Thickness Measurements related to the fate of MW-17S.

Response: The attached aerial photograph shows activity in the cloverleaf of I-280 where this well was situated. It is presumed that the well was damaged during these activities. No additional information is available.

Comment 5. Sections 9.2 Recommendations - Landfill

Response: Please note that the Phase 2 TM does not recommend additional "investigations" of the landfill. The recommendations are to:

1. Collect an additional round of groundwater samples to confirm the current conclusion that the landfill does not appear to be a source to groundwater contamination. This is despite the facts that the landfill does not have a liner, there are no historic records on what was deposited in the landfill, contamination was detected in soil samples from the landfill (although no trends could be noted from the data), and the materials are heterogeneous thus creating the potential for the landfill to serve as a source to groundwater contamination (although this is not supported by the groundwater data obtained to date).

2. Delineate the edge of the landfill as part of the design of a remedy for the landfill (likely some type of cover that would be consistent with future site uses).

Comment 6. Sections 9.2 Recommendations - LNAPL

Response: Following submission of the draft Phase 2 TM, we considered both the Phase 1 and Phase 2 RI results in evaluating overall remedial approach options for the site. The TM submitted to EPA on October 9th, discusses various remedial approach options for the site. The need for collecting the additional data under this comment would depend on the selected remedial approach. Specifically, if the selected remedial approach is to remove LNAPL to the extent practicable (practicable including considerations of accessibility, cost, overall site setting, and future site uses) without achieving individual contaminant cleanup levels, then this additional data may not be needed. We recommend that a response to this comment be coordinated with the selected path forward for the site.

Comment 7. Sections 9.2 Recommendations - LNAPL

Response: Based on the characteristics of the LNAPL material, the air/bio sparge technology appears not to be applicable at the site. This recommendation for additional data applied only if the air/bio sparge technology was selected for the site.

Comment 8. General Investigations

Response: The need and scope of these investigations would be linked to desired future site uses, the selected path forward remedial approach, and the desired phasing of future work. We

recommend that these considerations be discussed / included when developing the approach for the second operable unit.